

Application No. 10/510,534  
Filed: April 20, 2005  
TC Art Unit: 1744  
Confirmation No.: 2313

REMARKS

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Claims 1-6 are currently pending. Claims 1-6 stand rejected under 35 U.S.C. § 103(a). The claims are also provisionally rejected for double-patenting. Claims 1 and 2 have been amended; claims 4-6 have been canceled without prejudice; and claim 7 has been newly added. Accordingly, after entry of this amendment, the pending claims are claims 1-3 and 7.

AUG 15 2007

The Applicant respectfully traverses the grounds for rejection and requests withdrawal of the same. The issue of double-patenting shall be addressed when and if claims in the application are allowed.

SECTION 103(a) REJECTIONS

Claims 1-4 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent Number 5,633,083 to Iwai, et al. ("Iwai") in view of U.S. Patent Number 5,409,714 to Ishijima ("Ishijima"); and claims 5 and 6 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Iwai and Ishijima, further in view of Japanese Laid-Open Published Patent Application JP 2001-199823 to Itou ("Itou"). The Applicant respectfully traverses the grounds for these rejections in view of the above amendments and for the reasons provided below.

Claims 1-4

The Examiner asserts that, the Iwai reference discloses a toothbrush having antimicrobial agents coated on the bristle

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filaments thereof and, more particularly, a toothbrush having bristle filaments that are coated with an antimicrobial agent, causing distribution of the antimicrobial agent to be more dense on the outside surface of the bristle.

According to Iwai, however,

in order to produce the toothbrush of the present invention, for example, a material for the filament is melt-extruded according to the conventional method and, after cooling, the extruded material is heat-stretched until its diameter becomes about 100 to 500 $\mu$ . A predetermined amount of a solution of the complex obtained by dissolving the above polymer and cationic bactericide in a suitable solvent is applied to the surface of the stretched filament material, and it was set and dries in a neat setting furnace to obtain a coating treated filament. Then, this is implanted in a suitable handle to produce the desired toothbrush.

U.S. Patent Number 5,633,083, col. 3, lines 35-45 (Emphasis added). Thus, the applied cationic bactericide is "applied" or "coated" on the exterior surface of the filaments. There is no mixing of the synthetic resin and the antimicrobial agents.

In contrast, claim 1 of the present invention recites, in pertinent part, that, the "product obtained by pulverizing shells having crystalline structural body of calcite type structure of calcium carbonate is mixed" with a synthetic resin of the bristles or of the handle, which is to say that the synthetic resin and the antimicrobial agent are blended or integrated in a common matrix in which, further, the "products are more densely distributed on an outside surface of each bristle or on a surface of the handle".

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Coating a cationic bactericide on an outer surface of a bristle and mixing an antimicrobial agent with a synthetic resin before extruding the bristle produce a distinctly and inherently different product. Indeed, mixing implies blending or integrating of two or more materials into a common matrix whereas coating means applying one material to another without any integration or blending. Advantages of mixing include, for example, when the bactericide coating is worn off of the bristles of Iwai, there is no more antimicrobial agent. However, there will always be at least some antimicrobial agent on the bristles (or handle) of the invention as claimed.

Although the coated-bristles inherently include higher density of the bactericide on an exterior surface, that result is intuitively obvious: some or none. Iwai does not teach, mention or suggest, mixing the bactericide with the bristle materials when they are heated and heat-stretched. Nor does Iwai teach, mention or suggest, mixing the bactericide with the handle resin material. With Iwai, there is no density of bactericide within the bristle itself and some density of bactericide on the exterior surface. Because it is "mixed", the present invention includes antimicrobial agent throughout the resin-agent matrix.

Nor does the Ishijima reference make up for the shortcomings of the Iwai reference. Ishijima is relied on for teaching calcium oxide-type calcined antimicrobial agents and calcium oxide-type calcined antimicrobial agents in combination with calcium carbonate additives. Ishijima, however, does not teach, mention or suggest mixing the pulverized shell particles with the

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synthetic resin so as to distribute the pulverized shell products more densely on the outer surface of the brush and/or bristles. Furthermore, there is nothing in Ishijima or Iwai to suggest that calcium oxide-type antimicrobial agents can be substituted for the polymers and other chemical compounds taught by Iwai or that calcium oxide-type antimicrobial agents in the polymeric material matrix would migrate as the chemical compound agents migrate.

With respect to claim 2, a bristle-coating embodiment of the present invention is shown in FIGs. 2 and 3 and described on pages 6 and 7 of the Specification. Claim 2 has been amended to be conjunctive rather than disjunctive. Hence, claim 2 now recites that, the toothbrush includes bristles coated with a coating material containing a product obtained by pulverizing shells having crystalline structural body of calcite type structure of calcium carbonate and

a handle of a synthetic resin with which a product obtained by pulverizing shells having crystalline structural body of calcite type structure of calcium carbonate is mixed.

Iwai does not teach, mention or suggest, mixing the bactericide with the handle resin material.

In the event that, the Examiner is inclined to combine Cueman to Iwai and Ishijima, the Cueman reference merely teaches embedding a chemical compound antimicrobial agent into the batch of the polymeric material to be used in the manufacture of the toothbrush handle. See, e.g., Cueman, col. 1, lines 63-66; col. 4, lines 41-56. Hence, the antimicrobial agent is evenly

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distributed throughout the matrix of the handle. The Cueman reference, further, discloses that the antimicrobial agent selected is of a type that will migrate into the bristles of the toothbrush. See, e.g., Id., col. 5, lines 20-57. The Cueman reference does not teach, mention or suggest distributing the pulverized shell products more densely on the outer surface of the brush and/or bristles than the interior.

Accordingly, claims 1-4 satisfy all of the requirements of 35 U.S.C. § 101, et seq., especially § 103(a), and are in condition for allowance. Withdrawal of the rejections is respectfully requested.

#### Claims 5 and 6

Nor can the Itou reference make up for the deficiencies of the Iwai, Ishijima, and/or Cueman references. Itou does not teach, mention or suggest mixing pulverized shell particles with a synthetic resin such that the pulverized shell products are more densely distributed on the outer surface of the brush and/or bristles.

Accordingly, claims 5 and 6 satisfy all of the requirements of 35 U.S.C. § 101, et seq., especially § 103(a), and are in condition for allowance. Withdrawal of the rejections is respectfully requested.

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The Examiner is encouraged to telephone the undersigned attorney to discuss any matter that would expedite allowance of the present application.

Respectfully submitted,

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